What is cogongrass and how worried should we be?

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What is cogongrass?

*Imperata cylindrica*

- **Family**: Poaceae, **Tribe**: Andropogoneae
- Warm-season (C4), rhizomatous grass
- Multiple introductions from East Asia in US
- Five recognized varieties worldwide
- One of the world’s most noxious weeds
- Closely related to Johnsongrass (*Sorghum halepense*) and many other highly invasive grasses in the South

(Hubbard et al. 1944, Holm et al. 1977)
• Prolific Seed Producer (>1000/inflorescence)
• Rhizomatous

• Obligate Outcrosser
• Wind Pollinated and Dispersed
• Individual tiller with cylindrical culm
• Can be both glaborous and pubescent
• Off-center mid-rib

• Extensive below-ground network of rhizomes
• Scaled-rhizomes
• Piercing tips
• Can extend 4-6’ in a single growing season
• Pierces through its own rhizomes and roots as well as other plant species

• Will allocate most resources to rhizomes after treatment or disturbance to
  • Perenniate
  • Swiftly regrow leaf tissue
Where is it and how bad is it?

- Alters forest succession
- Highly flammable
- Native species displacement
- Reduction in habitat availability
- Resource competition: Light, water, nutrients
- Alters community composition (monotypic)
- Resilient: Difficult to kill or remove
Introduction

Disturbance (Fire)

Timber Loss

Lucardi 2009

Bryson, Forestry Images

Ervin 2005
Dispersal
Red Baron: The horticultural cultivar

- Red Baron (var. konegii or rubra)
- a.k.a. Japanese Blood Grass
- Horticultural cultivar
- Presumably developed in Japan
- Popular garden plant
- Persists in cold climates (e.g., MI, OR, MD, ID, KY)
- Still sold commercially in the US

Lucardi 2015; Lexington, KY
The Red Baron Problem

- Persists in cooler climes with longer freezing period(s)
- A robust, commercial planting desired by gardeners and enthusiasts
- Both male and female flowers on a single inflorescence leading to pollen exchange
- A developed variety and flowers are supposedly sterile
- Sales regulated by State Plant Industry departments and APHIS-PPQ
The Red Baron Problem: Reversion & Hybridization

Reversion under common-garden GH conditions (Cseke & Talley 2012)

Hybridization: pollen from Red Baron fertilized flowers on a wild-type invasive accession, generating F1-hybrid offspring from seed. (MacDonald and Lucardi, *in prep*)
ITS primers for *Imperata cylindrica* developed by Tsai CC & CH Chou (2000) *Taiwania* 45: 249-262

- F 5’-CGT AAC AAG GTT TCC
- R 5’-AGT TTC TTC TCC TCC
- Sanger sequence
- ABI 3730xl (PGML, UGA)
- Consensus tree from Bayesian inference
- Black lines indicate poor resolution

(MacDonald, Outlaw, Lucardi, in prep)
What should I look for?
Current Invasive Cogongrass Rx

- Developed for highly infested states
- The standard for FL, GA, AL, and MS
- Do NOT burn without consultation on infestation

- Glyphosate (i.e., RoundUp WeatherMAX®, etc.)
  - Apply at label (3-4 pounds a.i. per acre)
- Imazapyr (i.e, Arsenal®, Chopper®, etc.)
  - Soil- and foliar-active
  - Collateral damage (desirable hardwood mortality)
  - Apply at label (for cover-type)
- Carefully review treatment plans for riparian areas

- Recommended treatment frequency:
  - 1x in early growing season prior to flower
  - (OPTIONAL) 1x again upon regrowth from incomplete rhizome-kill
  - Monitor 2x per year (and anticipate reapplication) for at least 3 years for any regrowth and infestation
    - Include extent and size of infestation in monitoring
    - Recommended: Deposit voucher(s) of new infestations prior to treatment at a university herbarium

Resources:
1. https://www.cogongrass.org/control/
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